
Calculate Case Fatality Rates and Age-Specific Attack Rates

Case Fatality Rate

- **Proportion of cases that resulted in death**
- **CFR over 25%**
 - suggests established epidemic
 - begin control measures urgently
 - review clinical management
- **CFR under 5%**
 - suggests epidemic just beginning
 - may be "overdiagnosis"
 - severely ill may not be reaching health facilities

Case Fatality Rate

- $\frac{\text{Number of Deaths}}{\text{Number of Cases}} \times 100$
- 100 cases in one week, 10 patients died

$$\frac{10}{100} = 0.1$$

$$0.1 \times 100 = 10$$

CFR is 10%

Age-Specific Attack Rates

- Calculate using data from field investigation
- Use attack rates to plan vaccination strategy
- Age-groups with high ARs are at high risk of disease
- Target vaccination to age-groups with highest rates

Calculate Age-Specific Attack Rates

- 1. Calculate the number of persons who are in the age group in the area**
- 2. Divide 100,000 by the number of persons in the age group**
- 3. Tally the number of cases in the age group for the period of time chosen**
- 4. Multiply the result of Step 2 by the number of cases in the age group**
- 5. The result is the age-specific attack rate**

Typical Age Distribution

Sub-Saharan Africa

Age Group (years)	% of Total Population
0-4	17%
5-14	28%
15-29	28%
30-44	15%
45 and older	12%

Age-Specific Attack Rates Table Shell

Age Groups (years)	% of Total Population	District Population by Age	Number of Cases	Attack Rate
0-4	17			
5-14	28			
15-29	28			
30-44	15			
45 and older	12			

Age-Specific Attack Rates

Example: Dia District

**Step 1: Calculate the number of persons
in the age group in the area**

- **District population = 50,000**
- **17% of total population = 0-4 year olds**
- **$50,000 \times .17 = 8,500$**
- **Enter 8,500 in the table**

Age-Specific Attack Rates

Example

Age Groups (years)	% of Total Population	District Population by Age	Number of Cases	Attack Rate
0-4	17	8,500		
5-14	28			
15-29	28			
30-44	15			
45 and older	12			

Calculate Age-Specific Attack Rates

**Step 2: For each age group, divide
100,000 by the # of persons
in that age group**

- **For the 0-4 year olds**
- **$100,000 / 8,500 = 11.8$**

Calculate Age-Specific Attack Rates

Step 3: Tally # of cases in each age group for the period of time chosen

- 15 cases in 0-4 year olds
 - 15 cases in 5-14 year olds
 - 10 cases in 15-29 year olds
 - 0 cases in 30-44 year olds
 - 0 cases in 45 and older
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- Enter tallies in the table shell

Age-Specific Attack Rates

Example

Age Groups (years)	% of Total Population	District Population by Age	Number of Cases	Attack Rate
0-4	17	8,500	15	
5-14	28	14,000	15	
15-29	28	14,000	10	
30-44	15	7,500	0	
45 and older	12	6,000	0	

Calculate Age-Specific Attack Rates

Step 4: Multiply the result of Step 2 by the number of cases in that age group

- ▶ **For the 0-4 year olds**
 $11.8 \times 15 = 176$
- ▶ ***The ASAR for 0-4 year olds is 176***
- ▶ ***Enter the ASARs in the table***

Age-Specific Attack Rates

Example

Age Groups (years)	% of Total Population	District Population by Age	Number of Cases	Attack Rate
0-4	17	8,500	15	176
5-14	28	14,000	15	107
15-29	28	14,000	10	71
30-44	15	7,500	0	0
45 and older	12	6,000	0	0

High ASAR = High Risk

- Target vaccination at high risk groups
- ASARS in the example:
 - 0-4 year olds = 176
 - 5-14 year olds = 107
 - 15-29 year olds = 71
- If resources are limited, vaccinate in that order